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ABSTRACT

This field guide was used as a basis for documenting classroom events at five community school sites in Papua New Guinea, as part of the Indigenous Mathematics Project in its ongoing research into primary mathematics learning. Methodology for evaluating the appropriateness of curriculum form and content is described and specific sections focus on ordering materials, the lesson packet, and the school in the community. The section on the lesson packet contains explicit instructions on interviewing the teacher, recording classroom activities, taking field notes, and interviewing students, and includes codes for noting classroom organization, language shifts, classroom interaction, and classroom talk. In the section on the school in the community are instructions for describing such factors as the physical setting, materials and resources, classroom activities, and language use in the community. One appendix contains sample field notes, sample language use and classroom interaction forms, and student questionnaire. A second appendix presents comments on the field guide. (MNS)

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INDIGENOUS MATHEMATICS PROJECT

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FIELD GUIDE FOR STUDYING CLASSROOM EVENTS AND THEIR CULTURAL CONTEXT

Paula Levin
Maryl Gearhart
Randall Souviney

Working Paper 4
June 1980

THE INDIGENOUS MATHEMATICS PROJECT

This series of working papers and research reports has been published to provide a comprehensive source of documentation on research and development efforts associated with the Indigenous Mathematics Project. The Project was established in 1977 by the Government of Papua New Guinea to investigate various aspects of traditional mathematics development. During the first phase (1977–79) of the five year program, basic research in crosscultural cognitive development was carried out and indigenous counting, classification and measurement systems used throughout the country were documented. During the second phase of the project (jointly funded by the Department of Education and UNESCO), pilot instructional materials were developed and trialled. The intent was to assess the feasibility of utilizing complementary aspects of indigenous and Western mathematics as a basis for developing culturally relevant student materials, instructional aids and teachers' guides which reflect the practical constraints of the community school environment. The results of IMP work are intended to inform future curriculum development in an effort to provide more appropriate instructional materials and learning aids for Community Schools throughout Papua New Guinea.

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FIELD GUIDE FOR STUDYING
CLASSROOM EVENTS AND THEIR CULTURAL CONTEXT

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The Field Guide described here was used as basis for documenting classroom events at five community school sites in Papua New Guinea. The work was carried out under the auspices of the Indigenous Mathematics Project as an integral element in its ongoing research into primary mathematics learning. The authors wish to acknowledge the significant contribution made by IMP Associates K. Johnson, J. Lineberger and R. Rowe in trialling and revising the initial draft of this guide prior to its use in the study. Critiques of the Guide by Johnson and Gearhart are appended at the end of the report.

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GENERAL INSTRUCTIONS

Introduction

This field guide was written for researchers to document implementation of a supplement to the Mathematics for Community School curriculum in Papua New Guinea. We thought we could best achieve this goal through a full collaboration with the teachers at the five Indigenous Mathematics Project sites. We saw our function as evaluators not of teacher competence and performance, but rather of the curriculum - the appropriateness of its form and content, and the completeness of the instructions to the teachers. To this end, we attempted to treat teachers as active participants in the study, working hard to build a rapport which ensured that they did not feel that they were being "inspected" but rather that we valued their perceptions of these new instructional materials and their experience and knowledge in community school teaching. With their assistance we expected the results of our efforts to have a significant effect on mathematics curriculum and teacher training throughout Papua New Guinea.

The following notes were addressed to the IMP field researchers.

While you do not want to become totally obsessive about field notetaking, in order to reduce entropy both in the field and when you return, you must try to take records in a uniform manner similar to other researchers. First of all, every page in your notebook should be identified in the upper right hand corner, using the following code. Every page must be coded, including maps, forms, etc. If you do this correctly, if pages should happen to fall out of your notebook, or if they are pulled out for comparative purposes, they should be easily replaceable.

Identifying Code

1. School Site: Initials of Fieldworker
2. Subject Identification: Grade: lesson/section (PRE, CURR, LANG, CLAS, STU, DEBR) or ethnography/ section (SCH, COM.).
3. Date
4. Page number within section of lesson or ethnography

Examples:	Andra: PL 4:144/LANG 15 July 1980 3	Andra: PL Ethnography/SCH 16 July 1980 5

Notes: If a lesson goes on for more than one day, then after the lesson code (line 2) put (first day), (second day), etc. Start a new sequence of page numbers for each lesson or ethnography section. The general notes (1, 2 and 3 below) for each grade level should each begin with a new sequence of page numbers as well.

ORDERING OF MATERIALS

The basic ordering in the notebook is chronological. There should be four major divisions in your field notebook.

I. Second Grade
II. Fourth Grade
III. Sixth Grade
IV. Community Ethnography

(If you have a control classroom, put any data collected in a separate section clearly labelled) after the "experimental" classroom records for the same grade.)

With each grade section, the following order should be followed.

1. A sketch map of the classroom, with seating chart.
2. General notes about the classroom, not specifically related to mathematics lessons (noting especially changes over time). These will be collected during the course of the term, and will include comments about general classroom "climate", disciplining style, organizational features, procedures for periodic evaluation of academic progress (tests, grading exercise books, etc.) and changes over time in any of these categories.
3. General notes on teachers questions on overall curriculum (probably these will be collecting during vacation weeks preceding trialling penod.
4. Lesson packets (for each lesson). The observational and interview data for each lesson should be kept together, even if you collect the data on different days (e.g. the debriefing may take place the date of the presentation of the lesson.
   The lesson packets should contain the following sections:
   A. Preliminary Interview
   B. Classroom Activities (Implementation, Language, Interaction, Student Interview.)
   C. Debriefing Interview.
   For details on each of these sections, see the following descriptive materials.

Important Note: In your ongoing field notes, leave a wide margin at the left hand side of the page (1/3 of page). This will help in indexing the data at a later time. You should follow this form for all written records that you keep. If you find that you have pieces of information that don't fit clearly into the framework, devise and describe a coding system which is both explicit and consistent. Remember each new section should begin on a new page, so that data across sites can more easily be compared.

LESSON PACKET

Teacher Interviews --An Introduction: Teacher interviews are crucial to the evaluation of this curriculum. The research schedule calls for the interviewing of the teachers both before each lesson and after each lesson, these are called the preliminary interview and the debriefing interview respectively. You may find that the debriefing interview of one lesson and the preliminary interview of the next one will best be done at one time, perhaps in the evening. Whatever schedule you and the teacher work out, try to regularize it. We need teacher feedback on the materials throughout the term. It will probably not be a good idea to schedule the interview just before the lesson for the day. You will need some time immediately following the interview to complete your notes and plan classroom activities collection.

A. Preliminary Interview

The preliminary interview has three parts - each of which should be kept separate in your field notes.

1. Teacher's questions and comments
Begin the interview by eliciting from the teacher any questions or comments that he or she has about the lesson for the next day. You will probably want to do one grade level at a time, all the way through rather than talking about all at once. It is important here to be non-directive. Ideally, the questions "What do you see as unclear in tomorrow's lesson? What do you think of the lesson? What can we add to the instructions to make it easier for other teachers to do this lesson?" and the like, will elicit comments. If these questions do not seem productive, do what you can to elicit comments, perhaps stressing "How might we make these instructions more clear for an inexperienced teacher? rather than "What problems do you have with these materials?" List the questions and comments, numbering them from 1 to infinity.

2. Narrative
The second part of the interview will be a discussion of the comments and questions that are bought up. You should certainly respond to and assist the teachers at this point, but try not to take over, or plan the lesson for them. You may find yourself answering many questions or few questions, giving much advice, or only a little. Whatever the case, the important things are to:
1. be responsive rather than taking charge of curriculum planning;
2. (THIS IS VERY IMPORTANT.) Keep careful notes on the course of the discussion and interview.

At the time of discussion you will probably be able to take only cursory notes. These should be transcribed and made more full just after the meeting. At the end of the narrative description, try to summarize the session. (e.g. X found the instructions here vague - or - X thought he understood the instructions, but upon discussion he realized that he was unsure of the purpose of the lesson.)

3. Comments

The third part of the preliminary interview is very important for later analysis of the field notes. While the second part is a fairly straight-forward narrative of your discussion with the teacher (questions asked, decisions made, changes made, etc.) this third section should contain your reactions to, and comments on, the interview. In order for the summary task not to be completely overwhelming at the end of the project, you must try to interact with your notes every day. In this section, record your reactions to and cummulative analysis of the teacher's interaction with the curriculum. (e.g. X appears less anxious about modifying the curriculum, or X is starting to express dissatisfaction with the lack of direction.)

B. Classroom Activities Record

Four categories of classroom observation field notes are described:

1. Curriculum Implementation (CURR)
2. Language Use (LANG)
3. Classroom Interaction (CLAS)
4. Student Interview (STU)

Detailed Curriculum Implementation field notes should be taken for each CURR lesson indicated below (grades 2, 4 and 6). Summary Implementation notes should be prepared when the schedule calls for a detailed account of Language Usage, Classroom Interaction, Student Interview or Optional Lessons (OPT).

If time pressures force you to reduce the number of field note sessions for 2, 3 and 4 above, at a minimum complete all Curriculum Implementation, Language Usage for grade 2, Classroom Interaction for grade 4 and Student Interview for grade 6. Every effort should be made to code the Initial Transcripts for interactional speech events and teacher evaluation for grade 4 at a minimum. Remember, field notes are being taken at five sites and we plan to do a comparative analysis, therefore we need as complete a set of data as possible.

It is important to note that some classes may not complete the entire curriculum in the 6 week period, but make sure time is allowed for the completion of topics 149 and 164 (grade 4). The grade 2 lessons are not likely to be completed at any site. If more than five maths classes per week are scheduled, advise the teacher to use the extra periods for students to complete their assignments from previous maths classes or implement optional lessons (OPT).

RESEARCH SCHEDULE

Grade 2

53A CURR
53B CURR
53C LANG
53D CLAS
53E STU
53F OPT
53G OPT
53H OPT

55A CURR
55B LANG
55C CLAS
55D STU

56A CURR
56B LANG
56C CLAS
56D STU
56E CURR
56F LANG

57A CURR
57B LANG
57C CLAS
57D STU
57E CURR
57F LANG
57G CURR
57H OPT
57I 1 & 2 CURR

58A CURR
58B CURR
58C LANG
58D OPT
58E CLAS
58F STU
58G CURR
58H LANG

59A OPT
59B CURR
59C OPT
59D OPT

60A CURR
60B LANG
60C CLAS
60D STU
60E OPT
60F OPT
60G OPT

61A CURR
61B LANG
61C CLAS
61D STU
61E OPT

62A CURR
62B LANG
62C OPT
62D CLAS
62E OPT
62F OPT

Grade 4

144A CURR
144B LANG
144C OPT
144D OPT
144E CLAS
144F STU

145A CURR
145B LANG
145C CLAS
145D STU

146A CURR
146B STU
146C LANG
146D CLAS

148A CURR
148B LANG
148C CLAS
148D STU

149A CURR
149B CURR
149C LANG
149D STU

149E CLAS
149F 1 & 2 OPT
149G 1 & 2 CURR
149H OPT

164A 1 & 2 CURR
164B 1, 2, 3 CURR

Grade 6

6-1 CURR
6-2 LANG
6-3 CLAS
6-4 STU
6-5 CURR
6-6 LANG
6-7 CLAS
6-8 STU
6-9 CLAS
6-10 STU
6-11 OPT
6-12 CURR
6-13 CURR
6-14 OPT
6-15 LANG
6-16 CURR
6-17 CURR
6-18 OPT
6-19 LANG
6-20 STU
6-21 CLAS
6-22 CURR
6-23 OPT
6-24 CURR
6-25 OPT
6-26 STU
6-27 LANG
6-28 CLAS
6-29 LANG
6-30 STU
6-31 CURR
6-32 CLAS
6-33 OPT
6-34 LANG
6-35 OPT

1. Curriculum Implementation Field Notes

a. Introduction

i. Put the usual heading in the upper right hand corner.

ii. If there are changes from the usual classroom arrangement, draw a classroom map and seating chart for this lesson.

iii. Who is present, who is absent.

iv. Transition into lesson - (What were students and teacher doing prior to lesson?).

v. Transition out of lesson - (What do students do after lesson?).

vi. General comments - (e.g. Everyone's excited about the lesson today. The teacher seems anxious. Everyone seems bored....).

Field Notes: There are two versions of these field notes. For those lessons selected for Curriculum Implementation, you will make detailed notes. For those lessons selected for Language Use, Classroom Interaction or Post-Lesson Student Interviews, you will write only general summary and comments. Include the introduction as described above on both detailed and summary field notes.

b. Detailed Notes on Curriculum Implementation:

As you observe the lesson, write an ongoing narrative of the teacher's procedures for doing the lesson and the student's response to the lesson. Make your narrative factual and descriptive. Pay particular attention to any problems the teacher and/or students may be having, to any changes in procedure different from that which the teacher told you she/he would do in the pre-lesson interview.

Also note on what basis the teacher moves on from step to step in the lesson: does the teacher make an effort to assess the students' understanding before moving on to the next step or does she/he primarily direct the students through the steps in sequence? If she/he does assess the students' understanding, does she/he modify the lesson to help the children understand? How? (Noting the teacher's modification will provide ideas for changes needed in the lesson.) If the teacher simply directs the children through the sequence, could it be because: the students understand every step readily; the students don't understand the lesson well at all, but the teacher's concern is to just "get them through it."

Summary and Comments. Immediately after the lesson, read through your notes and write Summary and Comments. The Summary should summarize how the teacher used the materials, what, if any, problems there were in doing the lesson, students' responses to the lesson. Comments are more comprehensive. They are cumulative: make note of any changes in the teacher's methods for this lesson as compared to previous lessons observed. They are reflective: suggest ideas for changes in materials or procedures that would, you feel, result in a more effective lesson. The Comments should become richer over time as you observe more and gain a clearer sense of which aspects of the curriculum are more successful, which are less successful, and how the teacher, the nature of the school and its particular surroundings (site) have influenced the success of failure of the curriculum. Treat the Comments sections as a place to interact with the field notes; as a place to have a dialogue with yourself about the notes.

c. Summary Notes on Curriculum Implementation (When you are not making detailed notes.)
Write Summary and Comments paragraphs as described above.

2. Language Use
The Language Use Form is used to document the classroom contexts in which English, Pidgin or Tok Ples is used. We will observe classroom interaction with a focus on when and how each language is used, coding each time the language shifts.

General Directions. The columns on the right for Classroom Organization, Lesson Phase, and Narrative are to be used for an ongoing description of the lesson and its progress. (See below for detailed description of these coding categories.) These are very broad categories and will not require constant attention. They serve to define the lesson contexts in which any particular shift in language use occurs. The columns on the left are to be used when the language use shifts in order to document the nature of each particular language shift. When a speaker uses a language different from the previous language she/he or another speaker was just using, enter the Time, Language, Speaker, Addressee, Interactional Function, Lesson Function. (See below for detailed description of these coding categories.) Describe the context in which the shift occurred in the Narrative column.

The codes developed for the Language Use form are useful, in general, for describing lesson organization and classroom interaction. If you find you can monitor ongoing events in other domains (speaker, addressee, interactional function, etc.) feel free to code them even when there are no language shifts. The more complete the data the better. The coded information and narrative will assist you in writing Lesson Implementation summaries as well. At a minimum, however, complete codings whenever there is a language shift. Use arrows to indicate continuity and codes to indicate changes. See the example attached.

If all else fails, use these codes as guides to good field notes on language shifts AND tape the lesson. Complete the form afterwards from the tape in the manner described above. Re-use the tape once you've coded the form.

SPECIFIC DIRECTIONS

Classroom Contexts

Classroom Organization. This category describes the participant structure in the classroom. Code when a structure is organized, then draw an arrow continuously until a new structure is organized.

Cl	Teacher working with the class as a whole.
Gr	Students working in small groups.
Pr	Students working in pairs.
Ind	Students working individually.

Lesson phase. This category describes sequential phases of the lesson. These may or may not occur. You may want to create additional codes that better describe how your teacher organizes her/his lesson. Code when a phase is initiated, then draw an arrow continuously until a new phase is initiated.

Intro - Introduction of lesson: teacher explains concepts, outlines activity
Act - Activity: activity, worksheet, game
Disc - Discussion: discussion after activity

Narrative. This column is for richer description of the context for particular language shifts and for description of lesson when there are prolonged periods without shift.

Particular Language Shifts

Time: mark time class started and then time at which each particular language shift occurs.

Language: language use has shifted to:

E - English
P - Pidgin
T - Tok Ples (local language)

Speaker:

T - Teacher
Cl - Class
Gr - Group
Pr - Pair
Ind - Individual student (use name if you know it)

Interactional function:

Inf - Informing, telling about; speaker wants listener to listen.
Qu-O - Open question; speaker wants listener to explain.
Qu-C - Constrained question; speaker wants listener to answer specific question.
Dir - Directing, ordering; speaker wants listener to do an action response.
Ans - Answering a question.
Eval - Evaluating an answer (e.g. "That's right," "Not exactly,"...).

Lesson function:

Less - Lesson talk; talk that accomplishes the maths, lesson, talk about the concepts, algorithms, procedures, rules of the game, answers to problems.
Org - Organizational talk; talk about materials, seating grouping, turn taking (e.g. "who has finished?" "who would like to come to the board?"), behavior.
Irr - Irrelevant; side remarks (about weather, gossip, you, etc....).

3. Classroom Interaction

The purpose of audiotaping and taking field notes on classroom interaction is to document student participation and teacher evaluation of maths work in each classroom. Eventually a detailed transcript will be produced from each audiotape (or selected segments); our responsibility is to produce a good quality audiotape, an initial coded transcript and the overall summary and comments.

In the classroom, we will audiotape the lesson and simultaneously code speech events and evaluation procedures. Make a pilot audiotape at least once before your first 'real' tape to determine optimal placement in the classroom. When taping, try to keep the tape recorder in view and record the count number whenever there is a change in speaker, so that your notes can later be systematically used to identify speaker and addressee; if you can't keep the tape recorder in view, mark time (use stopwatch function if you have one on your watch) whenever there is a change in speaker. If the class breaks into groups, follow the activities of one group only.

The narrative column of the classroom interaction form should be used to expand the coded data in order to supply nonverbal behaviors and actions (gaze direction, pointing, hand-raising, writing, counting, game playing...) necessary to interpreting who is talking to whom and what is being done, inaudible talk necessary to interpreting audible talk, pre-tape and post-tape events that are necessary to interpreting on-tape talk.

Coding Classroom Talk

A. How is the teacher structuring classroom interaction.

1. Open invitation to bid.
   Student Response type:
   a. chorus (more than one spontaneous respondent)
   b. callout (one spontaneous respondent)
   c. teacher selects (individual or sub-group)

2. Individual nomination

B. How do students initiate interaction with the teacher.

Teacher Response type:

1. Answers question.
2. Ignores question.

C. How does the teacher give feedback (evaluate) correctness/incorrectness of academic work.

1. Positive evaluation.
2. Negative evaluation.
3. Teacher redirects evaluation to student(s).

Note: If the code is not sufficient to code entire event, expand in narrative.

Example: Teacher gives positive evaluation to only one member of a chorus.

	Response Type
Teacher Structuring Codes:	A1a, A1b, A1c, A2.
Student Structuring Codes:	B1, B2.
Teacher Evaluation Codes:	C1, C2, C3.

Summary and Comments

At the end of the class period, write a Summary and Comments (keep these two separate) Summarize patterns of student participation and turn-taking; teacher formulation of turn-taking rules and prohibition ("Everybody is supposed to raise their hands." "Don't call out." "Everyone answers together."). How is the teacher structuring small group and pair interaction. For example: does the teacher select a leader or ask the students to select a leader? Were the students supposed to work out a plan on their own? How did the students supposed to work out a plan on their own? How did the students supposed to work out a plan on their own? How did the students organize subsequent interactions? Do the students call to the teacher for help? Does the teacher supervise? Summarize the teacher's procedures for ongoing academic evaluation. Does the teacher note errors in order to diagnose children's understanding/misunderstandings? Does the teacher note errors and then work with the child to help with any misunderstandings of concepts, takds and algorithms. Does teacher ask children about processes and procedures: "How did you...?" "Why is ...?" "What if...?" - questions that require reflection and analysis. Comment on things like any changes you've noticed over time, any differences you notice across grade levels, general impressions. Your Summary and Comments will provide data in and of themselves and will assist you with the preparation of the Curriculum Implementation summary for the lesson.

We then have to prepare a rough transcript (see attached example). Using the Classroom Interaction form, code each speech event and add narrative as appropriate. The teacher and/or a student (they know names and voices) can help identify the speaker, addressee, at least a few initial words of that speaker's turn if the data cannot be collected in real time. Essential nonverbal and off-tape narrative that describes what is happening should be described in the narrative column to help interpret the talk at a later time. If you enlist the assistance of the teacher and/or a student in preparing the transcript, make interview notes about his/her perceptions of what went on in the lesson. All we need are just a few words at the beginning of teach turn, enough for a transcriber later on to fill in each turn and a code to describe the type of speech event. Don't worry about leaving enough space on your forms for the transcriber - these forms will only be used for this initial transcript.

4. Post-Lesson Student Interviews

We will interview a 'top' and a 'bottom' student from each class after selected lessons. Ask the teacher to suggest top and bottom students who are responsive and insightful. You may want to interview the same children each week; you may want a sampling of children. Papua New Guinean children seem to be generally quiet in situations like these, so we'll want to work with those children who seem comfortable and interested in taling about their maths work. We are likely to need assistance from a local translator with younger children.

Outline for Student Interview

a. Ask the child to describe what went on in the lesson. Be encouraging and receptive, but don't ask leading questions. Record child's description, including any spontaneous demonstrations, illustrations, and so on.

b. Probe the child's understanding. Ask questions about "why...?" "how...?"; be creative, and think of ways to assess how thorough the child's understanding is, whether she/he can generalize to similar activities, and so on. Take care not to ask child leading questions that supply the answer. Record your questions and his/her answers.

c. Ask the child to show you or someone else (perhaps another child not in the class) how to do the lesson activity. Again, be creative and respond to your own intuitions about what the child knows, what she/he is capable of explaining/showing to another. Record your requests to the child and his/her procedures for explaining/showing another.

C. Debriefing Interview

After each lesson you should "debrief" the teacher, that is find out how the lesson went from her/his point of view. Most likely this debriefing will occur in the evening, just before the preliminary interview for the next day's lesson. Whenever you schedule it, be sure to leave time to transcribe your notes soon afterwards. The interview should cover at minimum the following questions.

i. How do you think the lesson went?
ii. Was there anything unexpected that happened in the course of the lesson?
iii. Were there any changes that you made during the course of the lesson?
iv. Would you do the lesson differently next time?
v. Do you think that the students "got" the lesson? How do you know?
vi. Are there modifications that can be made in the curriculum or in the instructions that would help other teachers with this lesson?

In Summary: Each lesson packet should contain:

A. Preliminary Interview (every day)

1. Teacher Questions and Comments
2. Narrative
3. Comments

B. Classroom Activities Record

1. Curriculum Implementation
   a) Introduction (every day)
   b) Detailed Field Notes (see schedule)
   c) Summary Field Notes (every day, except when 2b is done)
2. Language Use (see schedule)
3. Classroom Interaction (see schedule)
4. Student Interviews (see schedule)

C. Debriefing Interview (every day)

THE SCHOOL IN THE COMMUNITY

You will most likely not collect data in order. Be sure, however, to label the information and arrange it in the sequence below (e.g. I.B.3). At the least, each subsection (A, B, C, etc.) should begin on a new page. The * indicates items of priority. Please use complete sentences when answering the questions in each section.

I. SCHOOL SETTING

A. Physical setting

* 1. Draw a sketch map of the area (island, valley, city, etc.) in which the school is located, noting the location of the school.
* 2. Draw a sketch map of the school building(s) indicating size, internal divisions (classrooms and other rooms labeled), and general layout of the school area.
3. When was the school built, of what materials, and by whom (who provided the labor? who provided the money? who provided the materials?)

B. Classrooms

* 1. Draw a sketch map of each of the target classrooms, including as much detail as possible about seating plans, wall decorations, lighting, door (window placement), seats, desks, tables, etc. Estimate dimension as well.
* 2. Is student work displayed? What is the visual scene of students?
* 3. Take photographs of the school and the classrooms, both inside and out.

C. History of Schooling

(You may be able to collect this information obtained in an early joint interview with the headmaster and the school committee chairman)

1. How many years has schooling been available to students in the village?
2. How many years has a school been located in the village?
3. What is the history of teachers in the school? How many have there been? Have they been Europeans, Papua New Guineans, but not locals? locals? How long have they stayed?
4. How has the school and schooling changed over the years? (e.g. numbers of students, types of teachers, materials available, adults attitudes toward schooling)
5. How has the existence of the school affected the community?

D. Materials and Resources

* 1. What books and texts are there in the classrooms? Take a complete inventory of books, indicating titles, quantities and condition of materials.
2. What books are available for the teachers' use?

3. What books are available for the students' use?
4. Are there books which are not used? What are they?
5. What materials do the students have? (e.g. pens, pencils, slates, paper)
6. How are student materials acquired? Must they be purchased by students?
7. What other materials are available to students? (e.g. central library of books, books of the teachers, other materials)
* 8. What other resources (e.g. typewriter, radio, duplicating machine) are available to the teachers? How have they been acquired (e.g. teachers, personal possession, bought by village)

E. Students, Teachers and Parents

* 1. Collect formally or informally (the latter being preferable) background information on the teachers of the school. What is their educational history? How long have they been teaching? Where else have they taught? How did they decide to become teachers? How well integrated are they into the local community (both their perceptions of this and your observations), what are the differences between their expectations upon coming to this school and the actual situation they faced? What problems do they perceive in teaching at this school? What are their perceptions of parents and students in this community?

* 2. Collect information on the students in the school. At minimum be sure to have the numbers of students in each class, by sex and by village (if relevant). In addition, be sure to have the sixth graders answer the attached students questionnaire.

* 3. If possible, talk to parents in the local village about their perceptions of the school, about the usefulness of Western schooling in general, how the school might be improved, etc. This information will probably be anecdotal and informally collected. It is of lower priority than the above data. Therefore if you are sitting around with adults in the village and there is a lull in the conversation, ask about these things.

F. Classroom Activities

* 1. Make copies of the teachers' daily schedules (programs)
* 2. Make copies of the teachers' yearly schedules, if these exist.
* 3. Interview teachers as to the educational careers of the children in this school. What percentage of the students go on to high school or vocational school? What percentage drop out before the end of sixth grade? What do those students who leave school do?
* 4. Informally interview teachers about their sense of the rankings of students. Whom do they think is smart? Dumb? Likely to succeed in high school? Likely to pass into high school? Unlikely, etc. What evidence do they give?
5. What are the various social groups among the students? When they have a choice, with whom do they play? (e.g. Those children same age, same village, same family, same sex)
* 6. Interview the first grade teachers about the problems, that they have noticed among the children just starting school in this school. In what areas are these problems - language? self-control? shyness? obedience? etc.

G. Student Questionnaires and Essays

1. At some point during the term, administer the attached questionnaire to the sixth graders. The students should write directly on the questionnaire, and you might want to read each question to them as they do along, to be sure they understand what is being asked. When the questionnaire side is finished, have them turn the page over to write the brief essays. Try to be non-directive, but give examples of things that they can write about. For the first essay, you might say, "What will you be doing? What will you be eating? Where will you be living? Will you be married? Will you have children?" Etc.
The second essay is included to elicit information about their work and play activities at home; what they do before they come to school in the morning, what they do when they go home in the afternoon, what they do on weekends, during school holidays, etc.
The third essay, should elicit a description of the children's homes -- Questions to stimulate writing might be "What size is your house? What is your house made of? Where do you cook? Where do you sleep? Etc."

II. COMMUNITY SETTING

A. Village orienting data

1. How many villages are served by the school?
2. About how many people live in each village?
3. What can people tell you about the relative stability of the area - do many people leave the village? If so, what age and sex people leave tend to be. Do they come back?
4. NOTE: While this checklist has been written in terms of "village" ethnography, do not feel dismayed if your school site is not in a "village" - the important point is to find out what you can about the area that your school serves, whether it be a village, two villages, fifteen hamlets, or a large city subdivision.
5. If you have access to civil records or census data, copy the relevant data for your area, especially numbers of births, deaths, etc. over past number of years. Census data from 1970 would be nice - also if the 1980 preliminary census materials are available, get them. See what you can find about infant mortality rates -- both actual numbers, and impressions that people have about rates.
6. Draw a sketch map of the area (village, etc.) that the school services. This may be the same area as in 1.A.1, but not necessarily so.

B. Political and Economic Activities

1. What are typical adult male and adult female activities in the area that your school serves? (e.g. gardening, fishing)
2. What work do children engage in before and after school? What about those who do not attend school, and those who are too young for school?
3. What is the local political structure? (e.g. big man, town council)
4. Briefly, what is the geography and ecology of your area?

C. Religion

1. What missionization efforts have been/are being made in your area?
2. What role have the missions played in school/education in the area?
3. Have the missions been involved in literacy attempts? If so, in what way?
4. What are the current traditional religious activities?
5. Is there cargo cult activity? Does it relate to schooling?
6. Are there religious activities that directly involve children? These might include both church (Western) instruction, such as Sunday School, and formal non-school initiation activities. It is important to note for these contexts, who teaches the children, what are they taught, and what method of teaching is used.

D. Outside Contact

1. What is the history of outside contact in your area?
2. What is the differential migration rates for males/females to the outside - for younger people and older people?
3. How many young people in the village have left for further schooling?
4. What kind of contact/relationship do people in your area feel toward the larger political unity (the province, the country)?
5. What communication networks are available to other villages, the provincial center, the capital? Include here information on telephones, roads, radio reception, library, mission, air strip..

E. Language Use in the Community

1. What is/are the vernacular(s) in your area?
2. Is Pidgin spoken? Is Motu spoken? If so, by roughly how many people?
3. Is English spoken? If so, by roughly how many people?
4. What is the first language of children?
5. When and in what contexts do people learn other languages that they speak?
6. What is the differential knowledge of languages in the area of your school? (that is, do adult women only speak Tok ples? Young men -- both Tok ples and Pidgin? etc.)
7. What is the differential <u>usage</u> of languages in the area? (Do children speak English outside the classroom? Is Pidgin used in public meetings? etc.)

F. Education and Socialization outside of the Classroom

1. From interviews and observations, try to discover how people in your area learn important skills (e.g. gardening, canoe building, house building, etc.). You may want to observe people learning these skills, and also interview adults as to how they <u>think</u> people learn skills (e.g. naturally; or by close observation; or by verbal instruction).
2. Who teaches children basic skills? Who are considered appropriate teachers of children? (Older siblings, mothers, adult men, mother's brother, etc.)
3. What do people believe is the way that children acquire skills and knowledge? Are there some things that children need to be taught, and others that they learn "naturally", according to your informants?
4. Are there arenas of formal instruction outside of the school?

G. The Family—Organization of Home Culture

1. What are general attitudes toward children--the value of children, birth control practices, birthing practices, adoption frequency, etc.
2. Describe the world of the child in your community. What do pre-school children do? What do school children do when they are not in school? What do school-age children who are not in school do?
3. How do children learn impulse control? Is it believed that children need to learn self-control? If so, how is this taught? Who disciplines children (if this is done) and by what methods?
4. What are general interactional patterns within the family? Is there deference towards all adults? Certain adults? Familiarity? Distance?
5. NOTE: While it will be useful to have as much information about the world of the child outside of the classroom, this is of lower priority than the schooling information. So, if you have the time and willing informants, pursue these topics. If you do not, get as much information as you can without neglecting the data collective on schooling.

APPENDIX I

Sample: - Field Notes
- Language-Use Form
- Classroom Interaction Form
- Student Questionnaire

SAMPLE

B. Classroom Activities

1. Curriculum Implementation

a. Introduction:
At 10 am the teacher collects the social studies essays that the class has been working on. Several children are still writing and don't hand in their papers right away. T identifies them ' "Vena, Roger, hurry up!" (Eng.) T. then tells them to bring their chairs to the front of the classroom, setting them out in a semicircle facing the blackboard (See chart. Two absent: Joe R. and Pimo R.).

b. Detailed notes:
T brings up a small wooden table to the centre of the semicircle. T has a stack of forms on the table and picking up one at a time she draws the shape on the board, using the forms as outline. Three boys (E.P., R.G., B.L.) are poking each other - T, without turning round, shouts "sit still" in Pidgin. T picks up the large blue circle and asks, "What is it?" (E.) Ewa raises his hand, T nods at him and he answers "a circle". "Yes, what else is it?" T. Damien, somewhat hesitantly, raises his hand, and softly and quizzically asks "a blue?" "Very good!" says T. "Yes, its a blue and it's a circle." She repeats the question again and the class sits silently. T waits 3 seconds and informs "it's a large." Then she picks up the red small triangle ... etc, etc (After going through the first three shapes, the kids seem to "catch on" - giving 3 attributes for each shape, but not once has T given the overall notion that what these all have in common is that they are shapes.)

(continue in detail)

c. Summary:
T expected the children to have a few problems with this classification lesson as she had done a similar lesson 19 March of this year. However the kids seemed to pull colour and shape, but not size, out of the forms, perhaps because only one was held up at a time (while the rest were on the desk) so that they didn't get a comparative view. The lesson took 20 minutes and seemed to generate interest as several children stayed around afterwards to handle the shapes (they had not been given a chance to handle them during the lesson ...

(etc.)

d. Comments:
T is following this series of lessons to the letter, but her continual reference to the teacher's manual makes me think that she doesn't see the point of

the lessons (I'll talk about this with her during debriefing). She doesn't get the idea across to the class that the qualities of the forms are "equal" and not ordered - that is, the children always give the answers first in terms of shape, then in colour, then in size. When one student gave a colour attribute first, she corrected him, saying, no that is not it yet, and solicited a response "circle" which she evaluated as right ...

(etc.)

SAMPLE

15 JULY 1980

4

IMP–1980 **LANGUAGE USE**

Time	Language	Speaker	Addressee	Interactional Function	Lesson Function	Classroom Organization	Lesson Phase	Narrative
10:45	E	T	C/	Dir	Org	C/	Intro	T. HAS STUDENTS GET OUT NECESSARY MATERIALS.
↓	T	↓	↓	↓	↓	↓	↓	AFTER 3 CHILDREN DO NOT UNDERSTAND
10:47	E	↓	↓	Inf	Les	↓	↓	T EXPLAINS LESSON
10:49	P	↓	Ind	Qu–C	↓	↓	↓	T ASKED QU IN E, GOT NO ANSWER, CHANGED TO P.
	↓ *	~	see narrative	~	↓	↓	↓	A FEW QUS AND ANS IN P T CHECKING COMPREHENSION
10:52	E	T	Ind	Qu–C	↓	↓	↓	T ASKS QU IN SAME QUS AS IN P, TO CHECK COMPREHENSION IN E –
↓	↓	~	See narrative	~	↓	↓	↓	SEVERAL QU–ANS IN E.
10:57	*	T	C/ –	Dir	Org	↓	Activity	T HAS STUDENT GET MATERIALS.
10:58	↓	↓	↓	Inf	Les	↓	↓	T EXPLAINS ACTIVITY
11:00	↓	↓	↓	Dir	Org	↓	↓	T HAS STUDENT BREAK INTO GROUPS OF 6
11:02	P	Ind_1	gr	Dir	Les	gr	↓	FOLLOWING GROUP A ONLY – STU TELLS ALL WHAT TO DO.
11:03	T	Ind_2	gr	Inf	↓	↓	↓	EXPLAINS WHY.
11:04	E	Ind_1	gr	↓	↓	↓	↓	EXPLAINS IN E, JUST AS T DID – THEN ADMONISHES gr TO USE E
	~	~	~	~	↓	↓	↓	SILENCE AS gr WORK
11:07	T	Ind_3	Ind_1	Qu–O	↓	↓	↓	ASKS WHY THIS ALGORITHM AND NOT COUNT ON BODY.
	E	Ind_1	Ind_3	Dir	Org	↓	↓	ADMONISHES 3 TO USE E, THEN EXPLAINS ALGORITHM.
	↓ *	↓	↓	Ans	Les	↓	↓	
11:10	~	~	~	~	↓	↓	↓	SILENCE.
11:13	E	Ind_4	Ind_3	Qu–C	↓	↓	↓	4 CHECKS ANSWER WITH 3 DISCUSSION WHICH SHIFTS TO T.
	T	Ind_4	Ind_3	Inf	↓	↓	↓	DISCUSSION ONGOING BUT NOW IN T
11:16	E	Ind_1	gr	Dir	Org	↓	↓	ADMONISHES gr TO USE E.
					↓	↓	↓	
						↓	↓	

* EXAMPLES OF RECORD OF LESSON WHEN NO LANGUAGE SHIFT

IMP 1980 CLASSROOM INTERACTION - INITIAL TRANSCRIPT

Counter / TIME	Speaker	Addressee	Talk	Narrative
2:30	T	S1.	Note: Review tape to capture first three words of each speech event.	A2
	S1	T		
	T	S2		A2
"	S2	T		
"	T	S2		C2
2:48	T	S3		A2
	S3	T		Note: Narrative expands coded events.
2:59	T	S4		TEACHER ADMONISHES CHILD.
3:25	T	chn.		TEACHER DIRECTS THE LEADERS OF 6 GROUPS TO
4:00	S5	S6		STAND IN FRONT OF CLASS AND PRACTICE ACTIVITY.-1ST
4:15	S6	S5		CHILD ASKS QUESTION & 2ND CHILD ANS. 2ND CHILD ASKS QUEST.
4:25	S ETC.	S7 ETC.		AND 3RD CHILD ANS. ETC. ETC.
6:10	T	C1		T. DIRECTS THE CLASS TO STAND AROUND THE ROOM IN THEIR
				GROUPS AND PRACTICE THE SAME ACTIVITY. T. GOES FROM GROUP TO GROUP, LISTENS TO CHN. CORRECT
				PRONUNCIATION, DIRECTS CHN. TO SPEAK LOUDER. T. WITH GROUP 1.
6:20 TO 12:00				T MOVES TO GROUP 2, 3, 4, 5 & 6. NOISE LEVEL RISING.
15:00	T	C1.		T. DIRECT CHN. TO TAKE THEIR SEATS.
16:00	T	C1		T. CONTINUES ACTIVITY
	S1	T		A1C. WITH WHOLE CLASS.
16:45	T	S3		A2
	S3	T		CHD. GIVES INCORRECT ANS., CLASS LAUGHS AT CHD.
17:05	T	S4.		T ASKS CHD. TO CHOOSE A2. ANOTHER CHD. TO ASK A QUEST. TO.
17:20	S4	S5		
17:30	S5	S4.		
17:40	T	C1		TEACHER HAS CLASS EVALUATE C3. S5 PERFORMANCE.

STANDARD SIX

1. Name .....

   Other Names .....

2. How old are you? .....

3. What village were you born in? .....

4. What village do you live in now? .....

5. Have you lived in your village your whole life. .....

6. Where else have you lived? .....

7. Father's Name .....

8. What does your father do? .....

9. Mother's Name .....

10. What does your mother do? .....

11. How many brothers do you have? .....

12. How many sisters do you have? .....

13. Have any of your brothers and sisters gone to high school? .....

14. How many people live in your house? .....

15. What church do you go to? .....

16. What subjects in school do you like best? .....

17. What subjects in school don't you like? .....

18. Who helps you with your school work? .....

19. What games do you like to play? .....

20. Who do you like to play games with? .....

21. How much time does it take you to walk to school? .....

22. Do you speak Tok ples? .....

23. Do you speak Pidgin? .....

24. Do you speak English? .....

25. Do you speak any other languages? .....

26. When you talk to your parents, which language do you use? .....

27. When you talk with your brothers and sisters, which language do you use? .....

28. When you play with your friends, which language do you use? .....

What I will be doing in five years

What I do now when I am not at school

What my house looks like

APPENDIX II

Critical comments relative to the Field Guide for Studying Classroom Events and Their Cultural Context, excerpted from Indigenous Mathematics Project field reports (Gearhart, 1980; Johnson, 1980).

COMMENTS ON THE FIELD GUIDE FOR STUDYING CLASSROOM EVENTS AND THE CULTURAL CONTEXT (PART I)

Curriculum Implementation: I was able to collect much rich and useful data on curriculum implementation as well as to make practical and concrete suggestions for curriculum revision. Still, it would have been helpful to me to have had more of an in-service prior to research at my site. I have not been trained in maths education, nor have I taught maths though I have taught remedial reading at several primary and elementary levels. Thus the objectives of certain parts of the IMP curriculum were occasionally unclear to me in the field.

The procedure described in the Guide for organizing field notes--Narrative, Summary, Comment--was clear and useful. I would have liked some suggested categories of notes specifically appropriate to the IMP project. I suspect my notes were at times overly detailed on matters not of concern to IMP curriculum implementation. Trialing of the curriculum implementation documentation procedures in a classroom in the Capital District would have been helpful.

Teacher interviews (pre and debriefings) should have been very useful, but the teacher at my site was shy and reserved and not at all eager to meet with me.

Language Use: The categories defined and the record forms designed were reasonably clear and easy to use, but I am certain that the manner in which the five observers interpreted and applied the categories varied somewhat. An initial trial of the coding system and establishment of reliability among observers would certainly be critical to any systematic study of language use using the procedures described. As it turned out, my teacher overwhelmingly spoke English in grades 2, 4 and 6. Furthermore, he could not speak tok ples so only two languages (English and Pidgin) were used in the lessons (the students virtually never used tok ples in the classroom, as it was prohibited). The procedures for documenting language use were adequate for describing those few occasions when the teacher switched from English to Pidgin.

Classroom Interaction: These, of all the field-note categories of data collected to document interactional events, were the most difficult for

me. Required were: audio-taping; moving recorder to judicious locations; on-site recording of speaker/addressee; on-site coding of turn-taking procedures ("teacher structuring"), responses to student questions ("student structuring"), procedures for evaluation ("teacher evaluation"); on-site recording of a narrative account of context and nonverbal behaviours; later preparing an initial transcript. It was impossible for me to do all this on-site (and I am experienced in recording social interaction). I found that something got sacrificed each time and that I spent long hours at home on each CLAS (Classroom Interaction) lesson. Sometimes my tape recorder remained poorly located, since I would forget to move it in the flurry of note-taking; often it was impossible to keep up with speakers and addressees, since dialogue was rapid.

I quickly gave up my attempts at on-site coding of teacher structuring, student structuring, and teacher evaluation and instead coded from the audiotape. There was an unfortunate problem with recording quality with the dictaphone tape recorders supplied, and I quickly switched to making recordings with an alternate recorder. The dictaphone play-back was adequate, however.

The interaction variable codes were reasonably clear and useful. However, I am certain that the five observers interpreted and applied them differently. I found myself shifting over time in coding definitions. For "teacher structuring", if the teacher did not appear to intend to solicit a response (merely paused, for example) and students 'responded', it was not clear how such 'response' should be coded. Chorus repetitions needed to be differentiated from chorus answers to questions.

For "teacher evaluation", positive evaluation/commendation (e.g. "very good") needed to be differentiated from confirming feedback (e.g. "that's correct"); negative evaluation (e.g. "you're not listening") needed to be differentiated from disconfirming feedback (e.g. "that's not it", "good try, but ..."); "teacher redirects evaluation to students" almost always was followed by "teacher evaluation", so what was in some sense one event received two codes. Work needs to be done on these codes and on establishing reliability among coders before these data can be analyzed across sites. Most of the initial transcripts have been prepared and coded. All have been summarized as CLAS field notes.

Student Interviews: In-service training relative to the IMP trial curriculum, particularly those lessons pegged for student interviews, would have facilitated breadth and depth of my student interviews. A list for each student interview lesson of questions minimally required by each of the five observers, with suggestions for further clinical exploration, would have facilitated comparative analysis.

Two students were interviewed at each grade level, usually a top and bottom student. The students' performance in the interviews commonly reflected the teacher's successes and difficulties in teaching the lesson. Where the teacher had had particular difficulty, I generally attempted to assess what the student did understand and then teach aspects of the lesson. The interviews progressed clinically. My interviews were generally brief and probably do not represent a strength in my notes.

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COMMENTS ON THE FIELD GUIDE FOR STUDYING CLASSROOM EVENTS AND THEIR CULTURAL CONTEXT (PART II)

Implementation: There were no major difficulties in documenting curriculum implementation, as specified in the Field Guide (Levin, et al, 1980). It is important to keep in mind that field notes alone could not accurately document all the interactions and behaviours of complex classroom events. Toward the end of the trialling period, I found that it was best to attempt to do the final form of the notes in real time, making revisions and summarizing at a later time. Compiling rough notes and later completely rewriting them in a final form proved to be overly time consuming especially in light of the heavy observation and interview schedule.

Language-Use: I found documentation of language-use on the forms provided the easiest form of field notes to take. The procedure I used was to record, on-site, all talk and actions in the narrative, and any unusual speaker/addressee information in that column. Later I would go back over the tape and fill in the rest. There should have been more codes for "Lesson Phase" because there was not an accurate way to code those times when the teacher stopped the lesson to give further instructions. Also it was usually hard to accurately code "Interactional Functions" when the teacher switched to Imbonggu (vernacular).

The teacher almost never used Imbonggu or Pidgin in grades four or six unless it was indicated as part of the lesson. On rare occasions he would switch unintentionally and say a word or two in Pidgin. Imbonggu was never used in lesson instructions. When the children were speaking to one another they would often speak vernacular and sometimes Pidgin or English.

Grade two, however, was an entirely different sigution. The children were often confused with instructions given in English. The teacher would then switch to Imbonggu or Pidgin to repeat the instructions or give further explanation. He would sometimes ask questions in Pidgin during the whole class instruction period. When giving individual or small group help he would readily switch to Pidgin or Imbonggu if the children seemed confused with English. The grade two children always talked in Imbonggu among themselves during the lesson time. Essentially the only English heard was number words.

Classroom Interaction: Field notes addressing classroom interaction variables seemed the most difficult and time consuming to do. It was hard to keep up with recording the talk and type of interaction at the same time. Usually I was only able to fill in the talk on site and later had to go back and fill in "Addressee-Speaker" column and code the interaction. I also had to go back through the tape following the lesson to note the counter numbers associated with specific speech acts and add any speach acts which were missed. I found the process very time consuming.

The classroom interaction codes were only able to describe a limited number of different classroom interaction patterns--only those related to certain teacher initiation/children, response/teacher evaluation sequences. There were many other aspects of classroom interaction that our codes could not capture. In actuality the coding on the "Language-Use Forms" probably gave a more accurate general description of classroom interaction and events during the lesson.

In any whole class presentation the same pattern of interaction generally occurred in each lesson and at each grade level. The teacher would initiate a constrained question and the whole class would chorus a response. There were some cases where an individual child would be called on to respond. It is interesting to note that the teacher did little evaluation, especially elaborative praise evaluations.

Student Interviews: Initially the student interviews were conducted without recording them. These interviews had to be kept very simple in order to take notes on the interviewers questions and the children's responses. I decided that these interviews would be more informative if the discussions were more clinical in nature. This required tape recording the interview so vital information would not be lost. I found it overly time consuming to go back and transcribe these tapes even though the interviews were very interesting. I resumed my initial structured interview format without recording. I think it would have been worthwhile to conduct an extensive clinical type interview taking only minimal notes and relying on transcription at a later time.

Conducting the interviews with the grade 2 children was very difficult due to the language factor. Most grade 2 children were not proficient enough in English, nor was I proficient enough in Pidgin, to carry out any involved verbal interactions. Essentially these interviews were limited to the interviewer directing the child to carry out a task and the child attempting to do so. There was little point to ask any "why" questions since often the children would either not understand what they were being asked, or if they did, it was unlikely that they could formulate a response I could understand. Interviews with older children were somewhat more productive though still convergent and structured in format.

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INDIGENOUS MATHEMATICS PROJECT

WORKING PAPER SERIES

1. Learning to Compute.
   R. Souviney, January 1980.

2. Strategies for Mathematical Problem Solving.
   R. Souviney, March 1980.

3. Assessment Administration Guide.
   R. Souviney, April 1980.

4. Field Guide for Studying Classroom Events and Their Cultural Context.
   P. Levin, M. Gearhart and R. Souviney, June 1980.

5. International Congress on Mathematics Education.
   R. Souviney, V. Kada and D. Malaga; D. Lancy; M. Britt; B. Roberts, August 1980.

6. Andra Community School Field Report.
   P. Levin, November 1980.

7. Ororo Community School Field Report.
   J. Lineberger, November 1980.

8. Divanap Community School Field Report.
   M. Gearhart, November 1980.

9. Kero Community School Field Report.
   K. Johnson, November 1980.

10. Muglamp Community School Field Report.
    B. Rowe, November 1980.

11. Teachers Notes and Student Worksheets – Grade 2. 1980.

12. Teachers Notes and Student Worksheets – Grade 4. 1980.

13. Teachers and Students Text – Grade 6. 1980.

14. The Changing Form of Numerical Reasoning Among the Oksapmin.
    G. Saxe, January 1981.